



Research on Effectiveness of Elementary School Libraries

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IN PRESENTING THE DEVELOPMENT of this project, its methodology, and its particular problems and difficulties, there are several background characteristics which perhaps make it quite different from some of the other investigations which will be discussed at this conference. One of these requires a confession on the part of the investigator, the others merely a reference to place the characteristics before you.

Let us start with the confession. The initiation of this project came quite frankly from a group of school librarians who saw a major problem in their work and turned to several library schools to seek help in solving the problem. These were the state supervisors of school libraries who in the spring of 1958 saw in the resources of the Co-operative Research Program the possibilities for research into the effectiveness of elementary school libraries. In their work as state supervisors, they were finding increasing difficulty in convincing local and county superintendents of schools that libraries in the elementary schools were a necessity. Rutgers was the only one of the several schools to whom this group turned which had the temerity to take the bait. This means, of course, that the investigation has from the first labored under the handicap of being argumentative research. It has been carried out by a director who had been emotionally convinced of the outcome of the research which she was in process of carrying out. You will agree that this required an excess of objectivity on the part of the investigator. However, you know the adage that fools rush in where angels fear to tread. In this case, let me hope that my devotion to the library faith justified me in the assumption of ability to complete this responsibility, with the assistance

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of staff, advisory committee, and colleagues in education and librarianship.

Secondly, this project should be classified as a piece of interdisciplinary research, I believe, in spite of the fact that it was sponsored by the Library School alone. The content of the research placed it squarely in the dual fields of education and librarianship, the staff represented both areas, and the advisory committee drew on both areas. This aspect of the project has been explored in some detail in a *Library Quarterly* article,¹ and so it only will be mentioned here that while there were frequent frustrations and some delay because of this interdisciplinary characteristic, the results were in the long run better because of it. Luszki states in her work on *Interdisciplinary Team Research* that "the kind of problem chosen may arouse resistance on an almost unconscious level because of the unspoken philosophy to which a person adheres. These differences . . . may result in compromise and lack of crystallization. . . . But if this danger can be averted and the conflicting points of view worked out among the disciplines, members will then have a clear-cut focus of interest and will have taken a long step forward in constructive work together."² The task of having to explain the rationale of librarianship to the educator on our staff and the point of view of the education field to the Director certainly contributed to the strength of the proposal and to the clarity of the thinking, such as it was.

Thirdly, the focus on elementary school libraries raised certain problems. Unlike college and high school libraries which exist in almost all institutions, the elementary school library actually exists in only a small proportion of schools. In New Jersey, only 16 per cent of the elementary school classrooms are served by what could be classified as a real school library. The elementary school library is, therefore, in a very real sense, in a highly transitional state as an institution. This condition necessitated an about-face in our planning and resulted in our focusing not on the library as the primary target of the investigation but on the classroom. Furthermore, if you are at all familiar with our public schools today you know that an elementary school classroom in Newark, New Jersey, and another in Phoenix, Arizona, may differ widely in many factors, among which are amount of money spent for the schools, socio-economic characteristics of the children, and degree of administrative and curricular control exercised at the state level. Suffice it to say that in this investigation, the milieu is that of the Middle Atlantic states where even the lower

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quartile of schools is above the average of the country as a whole in amount of money spent for education and where the administrative and curricular control is of the strict grass roots variety. While these characteristics may be quite different in other regions, they are at least common to all the schools in our investigation.

In reconstructing our methodology, its development and problems, my sources of information include not only the final study and the six quarterly reports to the United States Office of Education, but also a log kept for the 18-month period and notes on the most important planning conferences. Let me report first on the strategy of our investigation and second on its logistics, as a convenient way to differentiate between the general over-all plan and the development of the specific measures.

Research Design

The original plan of the investigation had been to use two control and two experimental schools, matched on a variety of criteria, as our sample for testing the effectiveness of elementary school libraries. On this basis, the project had been approved by the Cooperative Research Program. However, we were fortunate in having, at a very early stage in the work, the benefit of a brain-storming session of staff members of the Educational Testing Service. Among their criticisms of the control design was the very large number of criteria that would be essential for real matching of schools and the resultant near impossibility of securing enough schools, or schools that would really match, for the study. Now that the investigation is completed, I realize that we would not have been able to carry out this design. In discussing the kind of criteria to use in selecting schools, the advice of the ETS staff was to control on some criterion not influenced by the library, as for example, achievement in arithmetic.

At this early stage of the planning, the importance of the teacher's attitudes in creating a demand for library services and the crucial function of the leadership of the principal were pointed out as factors which had not been included in the planning and which might well be vital predictors in such a study. The ETS staff also pointed out that a dedicated school librarian might equally become a differentiating factor in a control-designed investigation. It was interesting to note that the ETS experts, while thoroughly knowledgeable in the role of the library in the educational situation, were able to think in terms of the real role of the library in a way which was not, I fear,

always true of the librarians. For example, their major concern was with the question, "How are children and books brought together?" rather than with the question, "Is the library run by a librarian or a PTA volunteer?"

From this conference, the decision was made to change the basic design of the study from one of a control situation, with schools matched on a number of criteria, to one of matching schools "generally"—that is, using groups which represented types of library service and selecting them on the basis of as few and as simple criteria as possible. This reduced the emphasis on matching and placed the investigation within the co-variance type of study, which has special advantages where direct control of variables is impractical or impossible, as in the present case.³

A second step in planning the over-all design was the determination of the areas of library service which would be evaluated and used as predictors. These were selected on the basis of a logical analysis of the profession's concept of the role of the school library. The Director was in this case very much influenced by the ideas being considered at that time in the development of *Standards for School Library Programs* and owes an especial debt to the concept of the school library program embodied in that document by Dr. Frances Henne.⁴ The major role of the school library is presented there in terms of its contribution to the reading program of the school and to instruction in library and study skills, and in its provision of a program of services and organized resources highly accessible to the classroom teacher and to the students. From this analysis the five major areas of the investigation were categorized as (1) evaluation of collections, (2) accessibility of resources, (3) library-related activities, (4) reading skills, and (5) library skills. While this is a much oversimplified statement, it is the best analysis I can make of how we arrived at these particular aspects of the study.

Before stating the specific objectives of the study, let me list the criteria and predictors for which we selected or developed and applied measures (see Table 1). The inter-relationships of these criteria and predictors, in terms of the elementary school library, comprised the major part of the study. The predictors identified and measured in this study (that is, those factors which in scientific terms measured the input, or the educational influences on children) included (1) certain socio-economic characteristics, (2) the quantity and quality of materials available in the schools, (3) the accessibility of materials

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in the school, and (4) the library-related activities provided for children and teachers in the school. The criteria identified and measured in the study (that is, those factors which measured the outcomes in terms of individual student scores) included (1) library skills, (2) scores of amount and quality of reading, and (3) scores on a standard achievement test, both the composite score and the individual parts. These predictors and criteria make up the twenty-six variables which the study produced and analyzed.

TABLE 1

Variables Studied in Phase One

Predictors

Socio-economic factors:

1. Father's occupational level
2. Father's educational level

School scores:

3. Score on library collections
4. Accessibility score
5. Library activities score

Criteria

Educational achievement (ITBS)

6. Vocabulary
7. Reading
8. Language
9. Library work-study skills
10. Total work-study skills
11. Arithmetic
12. Composite

Amount and quality of reading:

13. Library skills test
14. Number of books read
15. Number of literary forms
16. Number of interest areas
17. Enjoyment of reading
18. Reading difficulty level
19. Concept level
20. Number of sources

21. Number of magazines read
22. Frequency of magazine reading
23. Number of comics read
24. Number of purposes for reading
25. Number of stated reading interests
26. Number of activities

You will note three important variables which we omitted. Two have already been mentioned—teacher attitudes and the leadership role of the principal. One of the errors committed by the Director was that of over-ambition in trying to follow all of the interesting leads turned up in the course of the study rather than sticking to the outline laid down by the basic proposal. An attempt was made in the early months of the project to recruit a group of doctoral students in education to carry out an investigation of these two variables, but it had to be abandoned because the students were not ready for such a complex study and the resources of the project did not permit its inclusion. Since the completion of the study, a doctoral student in the Library School has investigated one aspect of the teacher factor in relation to library use.⁵

A third variable which was omitted but on which data are reported is the relationship of available public library service to the measures of pupil outcomes. The ETS staff reports that one of the factors which in their experience is positively correlated with achievement of high school students on their tests is the presence of a public library. The same situation may exist with elementary school students. Suffice it to say that we resisted the impulse to include this as an added variable in our investigation, other than to report it as a community characteristic. These then were three potentially significant variables which were not studied in this investigation but which would surely warrant further research.

A final point must also be made: Phase I was intended only as an exploratory or feasibility study, with the purpose of developing and testing measures for later use in determining (in Phase II) the effectiveness of the elementary school library, using a large sample. It was, of course, for this reason that a study based on such a limited sample could be envisioned. It also justifies the legitimacy of what frequently looked like, and were, "fishing expeditions," both in the identification and consideration of previously unconsidered variables and in the tryout of various methods of measurement or analysis. However, the timetable for the project and the funds and staff avail-

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able allowed us little leeway for any playing around with alternate procedures or for true experimentation with different methods of measurement.

This then is the process which we went through in developing the over-all strategy for this study of the effectiveness of elementary school libraries, culminating in a decision to change the original pattern from a control situation to a covariance design, involving the use of groups of schools representing differing types of library provision and selected on the basis of as few criteria as possible. Lumsdaine's comment about this particular technique and its pertinence to this kind of study is of significance here: ". . . matching or analysis of covariance procedures should be resorted to only when administrative factors preclude the setting up of a true experiment. . . . There are two general ways in which this condition may be attained. . . . The second, where assignment to treatments must be made in terms of intact, preformed groups, e.g., classrooms, rather than in terms of individuals, is to use the group rather than the individual as the unit of statistical analysis."⁶

Following the choice of this covariance design, then, the twofold objectives of the study were stated as follows: *first*, to develop instruments which would evaluate the program of library services available in elementary schools in terms of (a) the provision of library-related materials, (b) accessibility of resources and services, (c) the extent of library-related activities, (d) the degree of pupil mastery of library skills, and (e) the amount and kind of reading done by pupils and their purposes and interests in reading; and *second*, to study the score and ratings obtained on these instruments in terms of (a) their relationship to measures of educational achievement and community position, and (b) their ability to differentiate between schools having varying degrees of library provision.

The pairs of schools used in the study were chosen to represent three categories: (1) the school library with a full-time librarian, (2) the central collection with PTA or teacher supervision on an extra-time basis, and (3) the "classroom collection" type of library provision. We considered the inclusion of a fourth category—the school with a part-time librarian, no less than 2-3 days per week—but this was rejected because we were hoping to find maximum differentiation among the categories. Subsequent research by the writer and our students at Rutgers has found some differentiations at this level, and it is believed that the measures developed, or modifications of them,

may be used effectively for this purpose. Criteria for selection of the schools, in addition to their type of library provision, included a K-6 grade distribution, an enrollment of 300-700 students, and the availability of a common measure of educational achievement at the 4th grade level. Even with these three simple criteria, we had great difficulty in securing our cooperating schools and had to go out of the state for one of them. The population for the study consisted of the sixth grade students of the six schools and all the teachers.

Developing and Applying the Measures

The second major area of our methodology involved the application or development and administration of the measures in each of the specific areas. In each case, there was a procedure of selection or development of the measure followed by tryout, based on a statement of hypothesis, limitations, etc. Where the measure had to be developed (which was true of five areas, two of which had a number of sub-areas) we outlined the content, selected the appropriate form of measure, tried out and analyzed preliminary findings, and administered and analyzed the findings on the research sample. Reliability tests were also applied to all measures except two, and these are reported in the published study. (Items 7 to 11 in the bibliography refer to some of the specific measures developed for this project.) In keeping with the purposes of this conference, comment here is largely confined to a statement of problems and difficulties rather than to the significance of the findings.

Anyone contemplating a study of this complexity should realize that meshing the timetable for the development and administration of the measures with the school calendar, especially when all work must be completed within a single school year, is of itself no mean responsibility. In addition to that, the fitting of the project requirements to the calendar of doctoral candidates would only add to the administrative difficulties. In our case, our doctoral program in library service was not then ready for any of our students to participate, although one advanced student was able to make use of the project for a study and we could have assigned several parts of the project to doctoral candidates. The necessity of assuring the doctoral candidate the necessary independence in his investigation without at the same time jeopardizing the limitations of the project proposal would be another very real problem to the director of such a project. One of the problems which such a conference as this ought to con-

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sider, perhaps, is the lack of financial support for doctoral students to participate in such investigation; under the present conditions, such opportunities seem even more limited for students in the school library field than in fields such as documentation and special librarianship.

The most important of the over-all problems in administering the project was the difficulty in selecting the schools. Variability in grade distribution and in size of schools is not perhaps as serious in New Jersey as might be the case in other states since New Jersey schools are fairly homogeneous. Our greatest difficulty lay in the wide variations in the testing patterns followed in the state—not only in the particular test series used (ITBS) but also in the grade at which any given test was administered. It was necessary to carry out two preliminary studies to determine what tests were given and at what grade level and to survey the elementary school libraries in the East in order to determine whether New Jersey situations were good enough to be representative.^{12, 13} It is believed that this problem would now be somewhat easier to solve since Houghton Mifflin, the publishers of our selected test series, can identify well over 1,500 school systems in the Middle Atlantic region which use their product at the present time.

A second major problem was that of deriving measures which could be administered both in schools with school libraries and in schools having no central libraries but only classroom collections. It was for this reason that we decided that all book materials other than outright textbooks had to be evaluated, whether housed in classroom, library, or storage room. The greatest difficulty in this connection arose with the accessibility rating scale which was administered both by teachers and by a jury of experts. The teachers were most unhappy in their scoring of this scale since those not in a school library situation could not see the point, even though items were very carefully worded and tried out several times.

The measure of library-related activities was also responded to by the teachers, and since it was exceedingly long, it took three weeks to get returns from this one test. In connection with the achievement tests, a different difficulty arose, but one that was difficult to pin down or alleviate; we suspected some schools of "teaching to the test" but could in no case do anything about it in a single year's project. The Quality Measurement Project in New York State found it necessary for this reason to administer their tests themselves, but this procedure was beyond our resources. In evaluation of the collections,

also, there was considerable criticism of the Waples technique which we used, our research associate stating that it validated the checklist and not the collections. We have since conjectured whether collections might not be evaluated with validity on a straight dollar basis. Again, the multiplicity and complexity of the data resulting from our measure of student reading was one of the major problems of the entire investigation. Another problem throughout the project was that of gauging the impact of the research activities on the school and on the sixth grade classrooms. We came very close to the borderline of imposing more than even the most favorably-inclined faculty could tolerate; this would have to be a matter for serious concern in any similar investigation and by itself is a strong factor in limiting the number of variables which can be studied.

A third type of problem might be cited as deriving from weaknesses in the library profession. In this class would fall our difficulty in developing checklists for evaluation of the collections. For example, the lack of reviews of the mediocre and inferior trade book, coupled with the considerable proportion of book production which is pure trash, provided a major difficulty in the identification and rating of specific titles. The inadequacies of our bibliographic apparatus were also evident in this work. On the other hand, the critical reviews of reference works provided by the Subscription Books Committee of ALA made the problem far easier in rating this aspect of the collections. In a third type of material—supplementary textbooks—the problem was not one of lack of reviews of mediocre titles but rather lack of any reviewing at all. There were also wide differences in the way the materials are used in schools, even in the same schools, and there is real lack of acquaintance with these materials on the part of both teachers and librarians. If any proof were needed of the rapid changes taking place in education and of the great need for an organized center for all teaching and learning materials in each school, this one aspect of the study provided it.

A final type of problem arose in connection with the analysis of the findings, although so far as I am aware our difficulties in this connection were only those to be expected from this type of study—that is, one which produced scores on a great number of variables based on a restricted sample. While we believe that we met our objective of developing measures which differentiate among the three library categories for the sample of six schools, it is also true that three of the criteria which were based on school scores could not be handled at all

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in the correlation analysis because of the restricted size of the sample, and that on several of the variables there was significant overlapping among the mean school scores, in spite of the fact that the scores for the three categories did not overlap. "Overlap" is used here to identify a situation where the data fail to correspond to expectations in terms of the hypothesis, i.e., data do not progress uniformly but overlap from one category to the next. This overlapping of scores is not unexpected in this kind of analysis, although it can be handled statistically by regression analysis when the sample is larger.

The one instrument on which there was no overlap among schools or categories was the Accessibility Rating Scale, and, partly for that reason, I believe it is one of the strongest instruments which we developed. This problem of overlap evidenced itself in two ways in various sets of data. Sometimes the overlap was great enough so that (1) one category was significantly different from another due to the effect of one school but not both, and (2) no significant difference appeared between categories although there was significant difference between schools.

Summary

This completes the description of the development of our research design and of some of the problems and difficulties met in our project at Rutgers on the effectiveness of centralized libraries in elementary schools. It seems pertinent to mention also the amount of time and personnel involved in the project. Although the official period was eighteen months, the Director started work six months prior to actual initiation. The relief allowed from university duties constituted one class for two semesters of the four in this period, plus the last summer when full time was devoted to the project. As well as the payroll can now be reconstructed, nine different persons worked at various kinds of clerical and tabulating jobs, and we used seven different paid consultants, not counting the members of the Advisory Committee who assisted us in many ways with no remuneration other than their expenses. The Associate Director was employed on a half-time basis for the first five-month period and thereafter full-time; her duties were to supervise all tabulation and data-gathering operations in the field and office and to assist the Director in planning the research. All tabulation was done by hand other than the last correlational analysis of the scores for close to 300 students on the 23 pupil variables, which was done by machine computation. At the beginning of the second

quarter of the official time period, we were at the point in our research design where we ought to have been before we officially started. Therefore, my last word to anyone planning this kind of project is to allow plenty of time for literature searching and for developing the research design.

It should also be reported that although we have to date been unsuccessful in securing support for the projected Phase II of the investigation, there has been follow-up of the research. You will note from the bibliography that the measures are being separately issued in revised form and it seems likely that they will have value in a variety of situations. There have also been several studies both by the Director of the project and by doctoral students which have carried the research forward in various ways. Our most valued critics, the staff of the Cooperative Research Program, state that the argumentative purpose of the project has been achieved although it would seem to us that until the instruments have been applied in a really sizeable sample of schools, a minimum of thirty in our opinion, we can not truthfully claim that the hypothesis has been either proved or disproved. Another method which seems possible for Phase II would be the replication of the research using a number of different sets of schools in different areas of the country. This might have an advantage of permitting the inclusion of at least one different variable or area of analysis in each set and thus reduce the amount of intrusion on the classrooms of the cooperating schools.

In working out plans for a Phase II operation, it would be important to develop new hypotheses not tied to the differentiation between library categories but focusing squarely on the contribution of the school library to the educational program in elementary schools. It would also be important to study the instruments in more depth. Their reliability has not been clearly established in every case, and it is also quite possible that two or more of the instruments are measuring the same thing. Certainly inclusion of the variables which were omitted in Phase I should be planned for, since these factors seem to have real significance for our knowledge of education. There were also many instances in which we did not exploit sufficiently the data which were collected, for lack of time and staff. In particular, it would undoubtedly add to the significance of a Phase II study to explore what the different levels of library provision do for children of different levels of ability. These are only a few examples of the potentialities

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in continuing research on the effectiveness of library service in elementary schools.

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